CONFIDENTIAL

9 March 1953

MEMORANDUM TO THE FILES

FROM : [redacted] 50X1

SUBJECT : Thermoelectric Generator, URP-11

REF : Contract [redacted] 50X1

1. On a recent trip to the [redacted] 50X1
[redacted] a conference was held with [redacted] the Project Engineer 50X1
on the URP-11, for the purpose of discussing some new developments that had come up since the latest report on this project had been forwarded to this Agency. Since this Task has been closed down for the time being while awaiting a decision from the Research and Development whether to appropriate more money for carrying this Project on, the following facts may be pertinent in helping to form this decision.

2. [redacted] believes that the whole unit can now be built at a total 50X1
estimated weight of 18 pounds, including the water and glycerine necessary for its functioning. This would be accomplished by constructing the pile out of three lava plates, each plate having a dimension of 4" by 4" by 1/8". One plate would be a matrix of alternate Telkes metal and Constantin rods that would be cast in the matrix holes of the plate and then machined off to a smooth surface on both sides. This plate would serve as the middle of a "sandwich" with the outer plates being similiar lava plates, but having matrices of copper connectors. These plates would also be machined off to a smooth surface, and the whole pile could then be put together in the form of a "sandwich" and welded together, thus making a compact pile with a total overall dimension of 4" by 4" by 3/8". The bottom plate would be in a glycerine bath, in a closed container, with the heat being applied to this container. The top plate would be immersed in water, in a closed system, for conducting the heat away. In order to do this, it is proposed that a condenser be constructed of polyethylene, and having enough surface to cool the water by air convection. While this would give a condenser with an estimated weight of 7 pounds, including the water, the physical dimensions as presently drawn up would be 30" high by 18" by 4' long. This would be of rather excessive size for the Agency's purposes, but [redacted] thought that this condenser could be fabricated 50X1
out of polyethylene sheets, and possibly it could be made in such a way that it could be made collapsible. However, on the face of it, this looks like an awkward solution.

3. [redacted] had the estimated weights divided up as follows: 50X1

Condenser, including hermetically sealed water	- 7 pounds
Thermocouple Element	- 6 pounds
Miscellaneous	- 5 pounds
Total Weight of Complete Unit	18 Pounds

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4. [redacted] seemed quite optimistic about this project, and seemed to think that something could be worked out that would be quite near the original specifications as far as weight and output were concerned. The physical size of the unit is something that seems hard to cut down, unless some sort of collapsible condenser could be developed. 50X1

5. The above facts may help in formulating a decision on whether to cut this project off, or to go ahead with it under the proposal submitted by the [redacted] for the completion of the study phase. 50X1

[redacted] 50X1